

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method ~~Method~~ for preparation and surface modification of a plastic microfluidic chip, comprising:

~~prepare-preparing~~ a plastic substrate ~~is prepared~~;

~~form~~ forming a pattern of trench with desired trench size and aspect ratio in said plastic substrate;

~~subject-subjecting~~ said substrate to a physical surface modification;

~~treat~~ treating a surface of said substrate ~~is treated with~~ through chemical reduction to produce hydroxyl groups (-OH); and

~~treat-treating~~ said substrate with a surface modification agent.

2. (Original) The method according to claim 1 wherein said plastic substrate is a PMMA substrate.

3. (Original) The method according to claim 1 wherein said plastic substrate is carved with a laser scribe to form said pattern.

4. (Original) The method according to claim 3 wherein said plastic substrate is carved with a direct write laser scribe to form said pattern.

5. (Original) The method according to claim 1 wherein said physical surface modification comprises thermal annealing treatment.

6. (Original) The method according to claim 1 wherein said reduction agent comprises lithium aluminum hydride (LAH).

7. (Currently Amended) The method according to claim 1, wherein said surface modification agent comprises at least one chemical selected from ~~the~~a group consisted of chemicals with functional groups of perfluoroalkyl ($-\text{CnF}_{2n+2}$), amino ($-\text{NH}_2$) ~~or~~ and sulphydryl ($-\text{SH}$).

8. (Original) The method according to claim 1 wherein said surface modification agent comprises fluorinated organosilanes.

9. (Original) The method according to claim 1 wherein said surface modification agent comprises aminated organosilanes.

10. (Original) The method according to claim 1 wherein said surface modification agent comprises thiolated organosilanes.

11. (Currently Amended) The method according to claim 1, wherein said surface modification agent comprises at least one chemical selected from ~~the~~a group consisted of ~~1H~~, 1H, 2H, 2H-Perfluorodecyltriethoxysilane, 3-(Aminopropyl)trimethoxysilane and 3-Mercaptotrimethoxysilane.

12. (Currently amended) A plastic microfluidic chip prepared according to ~~any one of~~
~~claims 1-11~~ claim 1.

13. (New) The method accordingly to claim 1, wherein said plastic substrate is
annealed with a temperature that exceeds a glass temperature of 105 °C.